1. (Thrice Amended) A method for detecting a threshold temperature in an integrated circuit comprising the steps of:

generating a voltage reference that is substantially independent of a temperature of the integrated circuit;

receiving at least one programmable input specifying a value corresponding to a threshold temperature for the integrated circuit;

generating a sensing voltage that varies substantially linearly with the temperature of the integrated circuit;

scaling the sensing voltage in accordance with the value to generate a comparison voltage, wherein the comparison voltage is substantially equal to the voltage reference when the temperature of the integrated circuit is substantially the same as the threshold temperature; and

generating a signal when a difference between the comparison voltage and the voltage reference indicates the integrated circuit has attained said threshold temperature.

[generating a voltage reference that is substantially constant over a range of temperatures of said integrated circuit;

receiving at least one programmable input that specifies a threshold temperature for said integrated circuit;

generating a sensing voltage wherein said sensing voltage amplitude exhibits a substantially linear relationship with said temperature of said integrated circuit;

generating a scale factor based on said programmable input;

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scaling said sensing voltage based on said scaling factor to generate a comparison voltage such that when said integrated circuit attains said threshold temperature said comparison voltage is substantially equal to said voltage reference;

comparing said voltage reference to said comparison voltage; and

generating a signal when said comparison voltage exceeds said voltage reference to indicate said integrated circuit temperature attained said threshold temperature.]

2. (Twice Amended) The method of claim 1 wherein the step of generating the voltage reference further comprises the step of generating a silicon bandgap voltage reference. [as claimed in claim 1 further comprising the step of programming a threshold temperature by specifying said programmable input.]

3. (Twice Amended) The method of claim 1 wherein the step of generating the sensing voltage further comprises the step of generating a base-to-emitter voltage (Vbe) from a bipolar transistor. [as claimed in claim 2 wherein:

the step of generating a constant voltage reference comprises the step of generating a silicon bandgap voltage reference; and

the step of generating a sensing voltage comprises the step of generating a base to emitter voltage (V_{be}) from a bipolar transistor.]

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4. (Twice Amended) The method of claim 3 wherein the step of scaling the sensing voltage further comprises the step of selecting a bias of the bipolar transistor in accordance with the value.
[as claimed in claim 3 wherein the step of scaling said sensing voltage comprises the step of providing a plurality of resistive elements, wherein a first resistive element is coupled from the base to the collector of said bipolar transistor, and a second resistive element is coupled from the base of said bipolar transistor to ground, wherein said first resistive element and said second resistive element generate a scale factor for scaling said sensing voltage.]

5. (Twice Amended) The method of claim 4 further comprising the steps of:

providing a first resistive element coupled to a base and a collector of the bipolar transistor;

providing a plurality of series coupled resistors to form a second resistive element coupled to the base and an emitter of the bipolar transistor; and

shorting a combination of the plurality of series-coupled resistors in accordance with the value to select the bias of the bipolar transistor.
[as claimed in claim 4 wherein the step of programming a threshold temperature by specifying a scale factor comprises the steps of:

coupling a plurality of resistors in series to generate said second resistive element;

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coupling, across each resistor in said second resistive element, a transistor; and

selectively biasing each transistor so as to select a combination of said resistors in said second resistive element to specify said scale factor for scaling said sensing voltage.]

6. (Twice Amended) The method as claimed in claim 5 wherein [said] the plurality of resistors comprises a plurality of binary weighted resistors.

7. (Twice Amended) The method as claimed in claim 1 wherein [said] the integrated circuit comprises a microprocessor.

8. (Thrice Amended) An apparatus for detecting a threshold temperature in an integrated circuit comprising:

voltage reference means for generating a voltage reference substantially independent of a temperature of the integrated circuit;

at least one programmable input for receiving a value corresponding to a threshold temperature of the integrated circuit;

temperature sensing means for generating a sensing voltage wherein the sensing voltage varies substantially linearly with the temperature of the integrated circuit, the temperature sensing means scaling the sensing voltage in accordance with the value to generate a comparison voltage, wherein the comparison voltage is substantially equal to the voltage reference when the integrated circuit attains the threshold temperature; and

comparison means coupled to the temperature sensing means and the voltage reference means, wherein the comparison means generates a signal when the comparison voltage exceeds the voltage reference to indicate the integrated circuit temperature attained the threshold temperature.

[voltage reference means for generating a voltage reference that is substantially constant over a range of temperatures of said integrated circuit;

at least one programmable input for receiving a threshold temperature for said integrated circuit;

temperature sensing means for generating a sensing voltage wherein said sensing voltage amplitude exhibits a substantially linear relationship with said temperature of said integrated circuit, said temperature sensing means including scaling means generating a scale factor based on said programmable input and for scaling said sensing voltage in accordance with said scale factor to generate a comparison voltage such that when said integrated circuit attains said threshold temperature said comparison voltage is substantially equal to said voltage reference; and

comparison means coupled to said temperature sensing means and said voltage reference means for comparing said voltage reference to said comparison voltage, and for generating a signal when said comparison voltage exceeds said voltage reference to indicate said integrated circuit temperature attained said threshold temperature.]

9. (Twice Amended) The apparatus of claim 8 wherein the voltage reference is a silicon bandgap voltage reference. [The apparatus as claimed in claim 8 further comprising programming means for programming a threshold

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temperature by specifying said programmable input a scale factor for scaling said sensing voltage.]

10. (Twice Amended) The apparatus of claim 8 wherein the temperature sensing means further comprises a bipolar transistor for generating a base-to-emitter voltage as the sensing voltage.

[The apparatus as claimed in claim 9 wherein:

said voltage reference means generates a silicon bandgap voltage reference; and

said temperature sensing means comprises a bipolar transistor for generating a base to emitter voltage (V_{be}) for said sensing voltage.]

11. (Twice Amended) The apparatus as claimed in claim 10 further comprising a plurality of resistive elements, wherein a first resistive element is coupled from a base to a collector of the bipolar transistor, and a second resistive element is coupled from the base of said bipolar transistor to an emitter of the bipolar transistor. [wherein said scaling means comprises a plurality of resistive elements, wherein a first resistive element is coupled from the base to the collector of said bipolar transistor, and a second resistive element is coupled from the base of said bipolar transistor to ground, wherein said first resistive element and said second resistive element generate a scale factor for scaling said sensing voltage.]

12. (Twice Amended) The apparatus of claim 11 wherein the second resistive element comprises a plurality of series-coupled resistors, wherein at least one

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transistor is coupled across each of some of the plurality of resistors, wherein a combination of the resistors is selected in accordance with the value.

[The apparatus as claimed in claim 11 wherein:

said second resistive element comprises at least one resistor;

said programming means comprises:

at least one transistor coupled across each resistor in said second resistive element; and

biasing means for biasing each transistor so as to select a combination of said resistors in said second resistive element to specify said scale factor for scaling said sensing voltage.]

13. (Twice Amended) The apparatus [as claimed in 11 wherein said] of claim 11 wherein the resistors comprise a plurality of binary weighted resistors.

14. (Twice Amended) The apparatus [as claimed in 8 wherein said] of claim 8 wherein the integrated circuit comprises a microprocessor.

15. (Twice Amended) An apparatus for detecting a threshold temperature in an integrated circuit comprising:

a bandgap reference circuit providing a voltage reference substantially independent of a temperature of the integrated circuit;

a bipolar transistor providing a base-to-emitter voltage (Vbe) as a sensing voltage, wherein the sensing voltage varies substantially linearly with the temperature of the integrated circuit;

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at least one programmable input receiving a value corresponding to a threshold temperature for the integrated circuit;

a voltage divider coupled to the bipolar transistor, wherein the voltage divider scales Vbe in accordance with the value to generate a comparison voltage, wherein the comparison voltage is substantially equal to the voltage reference when the temperature of the integrated circuit is substantially equal to the threshold temperature; and

a comparator providing a signal when a difference between the comparison voltage and the voltage reference indicates that the threshold temperature has been attained.

[a silicon bandgap reference circuit that generates a silicon bandgap voltage reference, wherein said silicon bandgap voltage reference is substantially constant over a range of temperatures of said integrated circuit;

a bipolar transistor wherein a base to emitter voltage (V_{be}) from said bipolar transistor generates a temperature sensing voltage of said integrated circuit;

at least one programmable input that receives a threshold temperature for said integrated circuit;

a voltage divider circuit coupled to said bipolar transistor that scales said V_{be} to generate a comparison voltage such that when said integrated circuit attains said threshold temperature, said comparison voltage is substantially equal to said silicon bandgap voltage; and

a comparator coupled to said collector of said bipolar transistor and to said voltage reference circuit that compares said silicon bandgap voltage to said comparison voltage, and that generates a signal when said comparison

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voltage exceeds said silicon bandgap voltage to indicate said integrated circuit temperature attained said threshold temperature.]

16. (Twice Amended) The apparatus of claim 15 wherein the voltage divider comprises a first resistive element coupled from a base to a collector of the bipolar transistor and a second resistive element coupled from the base to an emitter of the bipolar transistor. [as claimed in claim 15 wherein said voltage divider circuit comprises a plurality of resistive elements, wherein a first resistive element is coupled from the base to the collector of said bipolar transistor, and a second resistive element is coupled from the base of said bipolar transistor to ground, wherein said first resistive element and said second resistive element generate a scale factor for scaling said V_{be}.]

17. (Twice Amended) The apparatus of claim 16 further comprising:

a plurality of series-coupled resistors forming the second resistive element; and

a plurality of transistors, at least one of each of the plurality of transistors coupled across one of the plurality of resistors, wherein the plurality of transistors select a combination of resistors in accordance with the value to provide a bias voltage for the bipolar transistor.

[The apparatus as claimed in claim 16 further comprising:

a plurality of resistors for said second resistive element;

a plurality of transistors coupled in parallel with each resistor; and

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a plurality of programming voltages input to said transistors for biasing said transistors so as to select a combination of said resistors in said second resistive element to specify said scale factor for scaling said sensing voltage.]

18. (Twice Amended) The apparatus [as claimed in 16 wherein said] of claim 16 resistors comprise a plurality of binary weighted resistors.

19. (Twice Amended) The apparatus [as claimed in 15 wherein said] of claim 15 wherein the integrated circuit comprises a microprocessor.

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